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EXAMINER	
SCHINDLER, DAVID M	

ART UNIT	PAPER NUMBER
2862	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/627,420	STOLFUS ET AL.	
	Examiner	Art Unit	
	David Schindler	2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Bot Ledynh
Primary Examiner

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/06/03, 3/28/05*, 10/27/03
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The page and line numbers cited below for reference DE 19623236 A1 come from a translation that has been provided with this action.

Claim Objections

2. Claims 3, 5, 10, 12, 28, 29, 30, and 32 are objected to because of the following informalities:

As to Claim 3, 5, 10, and 12,

The term "with" on line 2 is awkward and it is recommended to instead use "within."

As to Claim 28,

The phrase "the permanent magnet" on lines 1-2 lacks antecedent basis.

As to Claim 29,

The phrase "the permanent magnet" on lines 1-2 lacks antecedent basis.

As to Claim 30,

The phrase "the permanent magnet" on lines 1-2 lacks antecedent basis.

As to Claim 32,

The phrase "the same permanent magnet" on line 3 lacks antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Nakamura et al. (6,513,396).

As to Claim 1,

Behrens et al. discloses a non-ferromagnetic compressor wheel of a turbocharger ((Page 6 Lines 12-13) and (Page 6, Lines 24-25) and (Page 7, Lines 10-11 / note: aluminum)), the non-ferromagnetic compressor wheel having fins ((6) / blades) (Figure 1), a permanent magnet (9) positioned so as to induce eddy currents on the fins ((Page 4, Lines 31-34) and (Page 7, Lines 31-35) and (Page 8, Lines 1-5)), and, at least one coil (10) positioned with respect to the non-ferromagnetic compressor wheel and the permanent magnet so as to be magnetically biased by the permanent magnet and so as to sense rotation of the non-ferromagnetic compressor wheel ((Page 4, Lines 31-34) and (Page 7, Lines 31-35) and (Page 8, Lines 1-5) and (Page 8, Lines 16-28) and (Figure 3)).

Behrens et al. does not disclose using a magnetoresistor to sense rotation of the wheel.

Nakamura et al. discloses using a magnetoresistor (81) to sense rotation of a wheel ((Figure 15) and (Column 1, Lines 63-67) and (Column 10, Lines 8-36).

It would have been obvious at the time of the invention to modify Behrens et al. to include the use a magnetoresistor to sense rotation of the wheel as taught by Nakamura et al. in order to detect variation in rotation angle with high accuracy (Column 10, Lines 47-53).

It is noted that given the proximity of the coil (10) to the magnet (9), some of the magnet's magnetic field must pass through the coil and therefore bias the coil.

As to Claim 2,

Behrens et al. discloses the permanent magnet has a North-South axis, and where the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Nakamura et al. (6,513,396) and in further view of Cila et al. (3,846,697).

As to Claim 3,

Behrens et al. discloses a housing wall (2) near the non-ferromagnetic compressor wheel (Figure 1).

Behrens et al. in view of Nakamura et al. does not disclose the permanent

magnet and the magnetoresistor are housed with a housing having external threads, and wherein the housing is threaded into a wall near the non-ferromagnetic compressor wheel.

Cila et al. discloses the permanent magnet (22) and the magnetoresistor (26) are housed with a housing (12) having external threads ((Figures 1-4) and (Column 2, Lines 35-48)), and wherein the housing is threaded into a connector (Column 2, Lines 22-26).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. to include the permanent magnet and the magnetoresistor are housed with a housing having external threads, and wherein the housing is threaded into a wall near the non-ferromagnetic compressor wheel given the above disclosure and teaching of Cila et al. in order to firmly attach the housing having external threads to the wall near the non-ferromagnetic compressor wheel.

As to Claim 4,

Behrens et al. in view of Nakamura et al. does not disclose the housing has a faceted portion arranged to receive a tool for turning the housing into the wall.

Cila et al. discloses the housing (12) has a faceted portion (hexagonally-shaped) ((Figure 1) and (Column 2, Lines 20-26)).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. to include the housing has a faceted portion arranged to receive a tool for turning the housing into the wall given the above disclosure and the teaching of Cila et al. in order to firmly secure the housing to the wall.

It is noted that Cila et al. does not explicitly disclose a tool for turning the housing into the wall, however, it would have been obvious to a person of ordinary skill in the art to use a tool, given the faceted portion of the housing disclosed in Cila et al., in order to ensure the housing was tightly and securely connected to the wall.

6. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Nakamura et al. (6,513,396) and in further view of Takizawa et al. (6,894,484).

As to Claim 5,

Behrens et al. discloses a housing wall (2) near the non-ferromagnetic compressor wheel (Figure 1).

Behrens et al. in view of Nakamura et al. does not disclose the permanent magnet and the magnetoresistor are housed with a housing having a screw receiving flange for fastening to a wall near the non-ferromagnetic compressor wheel.

Takizawa et al. discloses the permanent magnet ((28) and (Column 6, Line 47)) and the magnetoresistor ((27) and (Column 6, Lines 44-45)) are housed with a housing (24) having a screw receiving flange for fastening to a housing (4) (Column 6, Lines 24-35).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. to include the permanent magnet and the magnetoresistor are housed with a housing having a screw receiving flange for fastening to a wall near the non-ferromagnetic compressor wheel given the above disclosure and the teaching of

Takizawa et al. in order to firmly secure the housing having a screw receiving flange to the wall.

As to Claim 6,

Behrens et al. in view of Nakamura et al. does not disclose the permanent magnet abuts the magnetoresistor.

Takizawa et al. discloses the permanent magnet ((28) and (Column 6, Line 47)) abuts the magnetoresistor ((27) and (Column 6, Lines 44-45)) (Figure 2).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. to include the permanent magnet abuts the magnetoresistor as taught by Takizawa et al. in order to ensure that the magnetoresistor is properly biased by the permanent magnet.

As to Claim 7,

Behrens et al. in view of Nakamura et al. does not disclose the magnetoresistor is coupled to a comparator.

Takizawa et al. discloses the magnetoresistor ((27) and (Column 6, Lines 41-45)) is coupled to a comparator (38) and ((Figures 2 and 14)).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. to include the magnetoresistor is coupled to a comparator as taught by Takizawa et al. in order to sound an alarm if an abnormality is detected (Column 14, Lines 15).

7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Nakamura et al. (6,513,396) and in further view of Stolfus (6,771,063).

Behrens et al. in view of Nakamura et al. discloses as explained above.

Nakamura et al. discloses the magnetoresistor (81) produces pulses as the fins (73) travel past the magnetoresistor (Column 10, Lines 8-53).

It would have been obvious at the time of the invention to modify Behrens et al. to include the magnetoresistor produces pulses as the fins travel past the magnetoresistor as taught by Nakamura et al. in order to detect variation in rotation angle with high accuracy (Column 10, Lines 47-53).

It is noted that Examiner is interpreting the production of pulse to be the same as the signals that are outputted by the magnetoresistor as the fins (13) pass the magnetoresistor.

Behrens et al. in view of Nakamura do not disclose the magnetoresistor is coupled to a pulse divider, and wherein the pulse divider divides the pulses produced by the magnetoresistor.

Stolfus discloses a sensor is coupled to a pulse divider, and wherein the pulse divider divides the pulses produced by the sensor ((Figure 5) and (Column 5, Lines 60-65)).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. to include a sensor is coupled to a pulse divider, and wherein

the pulse divider divides the pulses produced by the sensor as taught by Stolfus in order to improve the output of the sensor system (Abstract, Lines 1-10).

Nakamura et al. discloses the sensor is a magnetoresistor (Column 10, Lines 22-24).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. and Stolfus to include the sensor is a magnetoresistor in order to detect variation in rotation angle with high accuracy (Column 10, Lines 47-53).

As to Claim 9,

Behrens et al. discloses the permanent magnet has a North-South axis, and where the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

8. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Nakamura et al. (6,513,396) and Stolfus (6,771,063) and in further view of Cila et al. (3,846,697).

As to Claim 10,

Behrens et al. in view of Nakamura et al. and Stolfus discloses as explained above.

Behrens et al. discloses a housing wall (2) near the non-ferromagnetic compressor wheel (Figure 1).

Beherns et al. in view of Nakamura et al. and Stolfus does not disclose the

permanent magnet and the magnetoresistor are housed with a housing having external threads, and wherein the housing is threaded into a wall near the non-ferromagnetic compressor wheel.

Cila et al. discloses the permanent magnet (22) and the magnetoresistor (26) are housed with a housing (12) having external threads ((Figures 1-4) and (Column 2, Lines 35-48)), and wherein the housing is threaded into a connector (Column 2, Lines 22-26).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. and Stolfus to include the permanent magnet and the magnetoresistor are housed with a housing having external threads, and wherein the housing is threaded into a wall near the non-ferromagnetic compressor wheel given the above disclosure and teaching of Cila et al. in order to firmly attach the housing having external threads to the wall near the non-ferromagnetic compressor wheel.

As to Claim 11,

Behrens et al. in view of Nakamura et al. and Stolfus does not disclose the housing has a faceted portion arranged to receive a tool for turning the housing into the wall.

Cila et al. discloses the housing (12) has a faceted portion (hexagonally-shaped) ((Figure 1) and (Column 2, Lines 20-26)).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. and Stolfus to include the housing has a faceted portion arranged to receive a tool for turning the housing into the wall given the above disclosure and the teaching of Cila et al. in order to firmly secure the housing to the wall.

It is noted that Cila et al. does not explicitly disclose a tool for turning the housing into the wall, however, it would have been obvious to a person of ordinary skill in the art to use a tool, given the faceted portion of the housing disclosed in Cila et al., in order to ensure the housing was tightly and securely connected to the wall.

9. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Nakamura et al. (6,513,396) and Stolfus (6,771,063) and in further view of Takizawa et al. (6,894,484).

As to Claim 12,

Behrens et al. in view of Nakamura et al. and Stolfus discloses as explained above.

Behrens et al. discloses a housing wall (2) near the non-ferromagnetic compressor wheel (Figure 1).

Behrens et al. in view of Nakamura et al. and Stolfus does not disclose the permanent magnet and the magnetoresistor are housed with a housing having a screw receiving flange for fastening to a wall near the non-ferromagnetic compressor wheel.

Takizawa et al. discloses the permanent magnet ((28) and (Column 6, Line 47)) and the magnetoresistor ((27) and (Column 6, Lines 44-45)) are housed with a housing (24) having a screw receiving flange for fastening to a housing (4) (Column 6, Lines 24-35).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. and Stolfus to include the permanent magnet and the

magnetoresistor are housed with a housing having a screw receiving flange for fastening to a wall near the non-ferromagnetic compressor wheel given the above disclosure and the teaching of Takizawa et al. in order to firmly secure the housing having a screw receiving flange to the wall.

As to Claim 13,

Behrens et al. in view of Nakamura et al. and Stolfus does not disclose the permanent magnet abuts the magnetoresistor.

Takizawa et al. discloses the permanent magnet ((28) and (Column 6, Line 47)) abuts the magnetoresistor ((27) and (Column 6, Lines 44-45)) (Figure 2).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Nakamura et al. and Stolfus to include the permanent magnet abuts the magnetoresistor as taught by Takizawa et al. in order to ensure that the magnetoresistor is properly biased by the permanent magnet.

10. Claims 14-18, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Takizawa et al. (6,894,484).

As to Claim 14,

Behrens et al. discloses a non-ferromagnetic compressor wheel of a turbocharger ((Page 6 Lines 12-13) and (Page 6, Lines 24-25) and (Page 7, Lines 10-11 / note: aluminum)), the non-ferromagnetic compressor wheel having fins ((6) / blades) (Figure 1), a permanent magnet (9) positioned so as to induce eddy currents on the fins ((Page 4, Lines 31-34) and (Page 7, Lines 31-35) and (Page 8, Lines 1-5)), and, an

active magnetic field sensor (10) (Page 6, Lines 13-17)) positioned with respect to the non-ferromagnetic compressor wheel and the permanent magnet so as to be magnetically biased by the permanent magnet and so as to sense a magnetic field induced by the eddy currents to thereby detect rotation of the non-ferromagnetic compressor wheel ((Page 4, Lines 31-34) and (Page 7, Lines 31-35) and (Page 8, Lines 1-5) and (Page 8, Lines 16-28) and (Figure 3)).

Behrens et al. does not disclose a magnetic field sensor housing attached to a structure in proximity to the non-ferromagnetic compressor wheel, a permanent magnet disposed within the magnetic field sensor housing, and an active magnetic field sensor disposed within the magnetic field sensor housing.

Takizawa et al. discloses a magnetic field sensor housing (24) attached to a structure (4), a permanent magnet ((28) and (Column 6, Line 47)) disposed within the magnetic field sensor housing (Figure 2), and an active magnetic field sensor ((27) and (Column 6, Lines 44-45)) disposed within the magnetic field sensor housing (Figure 2).

It would have been obvious a the time of the invention to modify Behrens et al. to include a magnetic field sensor housing attached to a structure in proximity to the non-ferromagnetic compressor wheel, a permanent magnet disposed within the magnetic field sensor housing, and an active magnetic field sensor disposed within the magnetic field sensor housing given the above disclosure and the teaching of Takizawa et al. in order to detect rotation (Column 6, Lines 41-42) and to prevent elements such as dirt from affecting the magnetic field sensor.

It is noted that given the proximity of the coil (10) to the magnet (9), some of the magnet's magnetic field must pass through the coil and therefore bias the coil.

As to Claim 15,

Behrens et al. discloses the permanent magnet has a North-South axis, and wherein the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

As to Claim 16,

Behrens et al. discloses the permanent magnet abuts the active magnetic field sensor (Figure 1).

As to Claim 17,

Behrens et al. discloses the permanent magnet has a North-South axis, and wherein the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

As to Claim 18,

Behrens et al. does not disclose the active magnetic field sensor is coupled to a comparator.

Takizawa et al. discloses the active magnetic field sensor ((27) and (Column 6, Lines 41-45)) is coupled to a comparator (38) and ((Figures 2 and 14)).

It would have been obvious at the time of the invention to modify Behrens et al. to include the active magnetic field sensor is coupled to a comparator as taught by Takizawa et al. in order to sound an alarm if an abnormality is detected (Column 14, Lines 15).

As to Claim 25,

Behrens et al. does not disclose the active magnetic field sensor includes at least one Hall effect sensing element.

Takizawa et al. discloses the active magnetic field sensor includes a Hall effect sensing element (Column 6, Lines 44-45).

It would have been obvious at the time of the invention to modify Behrens et al. to include the active magnetic field sensor includes a Hall effect sensing element as taught by Takizawa et al. in order to accurately measure the magnetic field strength at the position of the sensor.

11. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Takizawa et al. (6,895,484) and in further view of Stolfus (6,771,063)

Behrens et al. in view of Takizawa et al. discloses as explained above.

Behrens et al. discloses the active magnetic field sensor produces pulses as the fins travel past the active magnetic field sensor ((Page 7, Lines 31-35) and (Page 8, Lines 1-28).

It is noted that Examiner is interpreting the production of pulse to be the same as the signals that are outputted by the magnetic field sensor as the fins (6) pass the sensor.

Behrens et al. in view of Takizawa et al. does not disclose the active magnetic field sensor is coupled to a pulse divider, and wherein the pulse divider divides the pulses by at least two.

Stolfus discloses a magnetic field sensor is coupled to a pulse divider, and wherein the pulse divider divides the pulses by at least two ((Figure 5) and (Column 5, Lines 53-65)).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Takizawa et al. to include the active magnetic field sensor is coupled to a pulse divider, and wherein the pulse divider divides the pulses by at least two as taught by Stolfus in order to improve the duty cycle output of the sensor circuit (Abstract, Lines 1-10).

Stolfus does not explicitly teach the use of an active magnetic field sensor, however it would have been obvious at the time of the invention to modify Behrens et al. in view of Takizawa et al. to use an active magnetic field sensor that is coupled to a pulse divider given the above disclosure and the teaching of Stolfus in order to have a higher signal to noise ratio and to therefore reduce errors.

As to Claim 20,

Behrens et al. discloses the permanent magnet has a North-South axis, and wherein the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

As to Claim 21,

Behrens et al. discloses the permanent magnet abuts the active magnetic field sensor (Figure 1).

As to Claim 22,

Behrens et al. discloses the permanent magnet has a North-South axis, and wherein the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

12. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Takizawa et al. (6,894,484) and in further view of Adelerhof (6,559,638).

As to Claim 23,

Behrens et al. in view of Takizawa et al. discloses as explained above.

Behrens et al. in view of Takizawa et al. does not disclose the active magnetic field sensor includes at least one giant magnetoresistive element.

Adelerhof discloses the active magnetic field sensor includes at least one giant magnetoresistive element (Column 1, Lines 40-44).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Takizawa et al. to include the active magnetic field sensor includes at least one giant magnetoresistive element as taught by Adelerhof in order to accurately measure the direction of the magnetic field at their position (Column 1, Lines 40-44).

As to Claim 24,

Behrens et al. in view of Takizawa et al. does not disclose the active magnetic field sensor includes at least one anisotropic magnetoresistive element.

Adelerhof discloses the active magnetic field sensor includes at least one anisotropic magnetoresistive element (Column 1, Lines 40-44 / note: AMR).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Takizawa et al. to include the active magnetic field sensor includes at least one anisotropic magnetoresistive element as taught by Aderehof in order to accurately measure the direction of the magnetic field at their position (Column 1, Lines 40-44).

13. Claims 26-32, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Stolfus (6,771,063).

As to Claim 26,

Behrens et al. discloses inducing eddy currents in fins ((6) / blades) of the non-ferromagnetic compressor wheel ((Page 6, Lines 24-25) and (Page 7, Lines 10-11 / note: aluminum) and (Page 7, Lines 31-35) and (Page 8, Lines 1-5)), sensing a magnetic field induced by the eddy currents by use of an active magnetic field sensor ((10) and (Page 6, Lines 13-17) and (Page 8, Lines 1-5)), so as to produce pulses having a pulse rate dependent upon a speed at which the non-ferromagnetic compressor wheel rotates ((Page 8, Lines 16-28) and (Figure 3)).

Behrens et al. does not disclose reducing the pulse rate.

Stolfus discloses reducing the pulse rate (Column 5, Lines 53-65).

It would have been obvious at the time of the invention to modify Behrens et al.

to include reducing the pulse rate as taught by Stolfus in order to improve the output of the sensor system (Abstract, Lines 1-10).

It is noted that Examiner is interpreting the production of the pulses to be the same as the signals that are outputted by the magnetic sensor (10) as the fins (6) pass the sensor.

As to Claim 27,

Behrens et al. does not disclose the reducing of the pulse rate includes reducing the pulse rate by use of a divider.

Stolfus discloses the reducing of the pulse rate includes reducing the pulse rate by use of a divider ((Figure 5) and (Column 5, Lines 53-65)).

It would have been obvious at the time of the invention to modify Behrens et al. to include the reducing of the pulse rate includes reducing the pulse rate by use of a divider as taught by Stolfus in order to improve the output of the sensor system (Abstract, Lines 1-10).

As to Claim 28,

Behrens et al. discloses the permanent magnet has a North-South axis, and wherein the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

As to Claim 29,

Behrens et al. discloses the permanent magnet abuts the active magnetic field sensor (Figure 1).

As to Claim 30,

Behrens et al. discloses the permanent magnet has a North-South axis, and wherein the North-South axis is pointed at the non-ferromagnetic compressor wheel (Figure 1).

As to Claim 31,

Behrens et al. discloses magnetically biasing the active magnetic field sensor ((Figures 1 and 3) and (Page 7, Lines 31-35) and (Page 8, Lines 1-5)).

It is noted that given the proximity of the coil (10) to the magnet (9), some of the magnet's magnetic field must pass through the coil and therefore bias the coil.

As to Claim 32,

Behrens et al. discloses the active magnetic field sensor is biased and the eddy currents are induced by the same permanent magnet ((Figures 1 and 3) and (Page 7, Lines 31-35) and (Page 8, Lines 1-5)).

It is noted that given the proximity of the coil (10) to the magnet (9), some of the magnet's magnetic field must pass through the coil and therefore bias the coil.

As to Claim 35,

Behrens et al. does not disclose the active magnetic field sensor includes at least one Hall effect sensing element.

Stolfus discloses the active magnetic field sensor includes at least one Hall effect sensing element (Column 1, Lines 60-61).

It would have been obvious at the time of the invention to modify Behrens et al. to include the active magnetic field sensor includes at least one Hall effect sensing

element as taught by Stolfus in order to accurately measure the magnetic field strength at the position of the sensor.

14. Claim 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Stolfus (6,771,063) and in further view of Adelerhof (6,559,638).

As to Claim 33,

Behrens et al. in view of Stolfus discloses as explained above.

Behrens et al. in view of Stolfus does not disclose the active magnetic field sensor includes at least one giant magnetoresistive element.

Adelerhof discloses the active magnetic field sensor includes at least one giant magnetoresistive element (Column 1, Lines 40-44).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Stolfus to include the active magnetic field sensor includes at least one giant magnetoresistive element as taught by Adelerhof in order to accurately measure the direction of the magnetic field at their position (Column 1, Lines 40-44).

As to Claim 24,

Behrens et al. in view of Stolfus does not disclose the active magnetic field sensor includes at least one anisotropic magnetoresistive element.

Adelerhof discloses the active magnetic field sensor includes at least one anisotropic magnetoresistive element (Column 1, Lines 40-44 / note: AMR).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Stolfus to include the active magnetic field sensor includes at least one anisotropic magnetoresistive element as taught by Aderehof in order to accurately measure the direction of the magnetic field at their position (Column 1, Lines 40-44).

15. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Behrens et al. (DE 19623236 A1) in view of Stolfus (6,771,063) and in further view of Durbin (4,551,715).

Behrens et al. in view of Stolfus discloses as explained above.

Behrens et al. in view of Stolfus does not disclose storing a maximum compressor speed reading from the active magnetic field sensor.

Durbin discloses storing a maximum speed reading from the active magnetic field sensor ((Column 3, Line 22) and (Column 9, Lines 62-68) and (Column 10, Lines 1-9) and (Column 10, Lines 29-34)).

It would have been obvious at the time of the invention to modify Behrens et al. in view of Stolfus to include storing a maximum compressor speed reading from the active magnetic field sensor as taught by Durbin in order to determine a maximum safe speed for the rotating element and to therefore prevent system failure (Abstract, Lines 1-2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Schindler whose telephone number is (571) 272-2112. The examiner can normally be reached on M-F (8:00 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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DS

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Bot Ledynh
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